Policy and Institutional Framework

for

Islamabad Deworming Initiative

Office of Member (Social Sector & Devolution) and Health Section

Planning Commission
Ministry of Planning, Development and Reform
Government of Pakistan
In Collaboration with
Line Ministries and Departments
Interactive Research & Development
Evidence Action &
Indus Health Network

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Message from

Member Social Sector and Devolution
Planning Commission

Pakistan is among the countries faced with high prevalence of soil transmitted helminthes and that too among school aged children. In certain areas including Islamabad Capital Territory this prevalence is as high as more than 50%. This affects children's health potentially causing anemia, malnourishment and impairment of physical and intellectual development. Children persistently infected with the worms are less likely to be literate and earn less as adults than those who grow up free of worms.

This state of affairs warrants effective deployment of measures among the target population to stop the transmission of the infection and institute prophylactic treatment measures. This Policy and Institutional Framework is the stepping stone for implementation of deworming initially within ICT and later shall be replicated in all the target 40 districts having high worm load.

I am confident the provincial and area governments will find this model framework helpful in implementation in their respective areas of jurisdictions. Planning Commission will continue to extend its all support in effective planning, management and implementation of the deworming initiative throughout Pakistan.

I felicitate efforts of health section for taking the leadership and visionary role, and line ministries/ divisions and technical assistance partners for their contribution towards speedy formulation of this framework in order to deploy the initiative at the earliest in the best interest of children and women of this country.

Dr. Asma Hyder
Member Social Sector and Devolution
Planning Commission

Acknowledgements

Following findings of first ever National Soil Transmitted Helminths (STH) Survey which revealed 44 high risk districts in Pakistan and Islamabad being one of them, Planning Commission undertook to bring together all the stakeholders in the Islamabad Capital Territory to deploy an effective and sustainable response initially within Islamabad. Development of this document is a stepping stone in this regard which will also set directions for the provincial and area governments to deploy similar response and measures in their vicinity.

The *"Policy & Institutional Framework for Islamabad Deworming Initiative"* is an initiative of the Office of the Member Social Sector & Devolution which was facilitated by Health Section of Ministry of Planning Development & Reform (M/o PD&R) Islamabad in collaboration with the line ministries and departments and development partners (Interactive Research & Development and Evidence Action).

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(Dr. Muhammad Asif)
Chief Health/ Convener Drafting Committee

List of Acronyms

CA&DD:	Capital Administration & Development Division
CDA:	Capital Development Authority
DMA:	Directorate of Municipal Administration
EMIS	Education Management Information System
FDE:	Federal Directorate of Education
FE&PT:	Federal Education & Provisional Training
GHD:	Global Health Directorate
HMIS	Health Management Information System
IB&NH	Information Broadcasting & National Heritage
ICT:	Islamabad Capital Territory
IDEAS:	Institute of Development & Economic Alternatives
IEC:	Information, Education & Communication
IHN:	Indus Health Network
IRD:	Interactive Research & Development
M&E:	Monitoring & Evaluation
M/o:	Ministry of
MCI:	Metropolitan Corporation Islamabad
MDA:	Mass Drug Administration
NHSR&C	National Health Services, Regulations & Coordination
P&D:	Planning & Development
PD&R:	Planning Development & Reforms
PSDP	Public Sector Development Program
RA&IFH:	Religious Affairs & Inter Faith Harmony
SS&D:	Social Sector & Devolution
STH:	Soil-Transmitted Helminths
ToR:	Terms of Reference
WHO:	World Health Organization

1. Background

The World Health Organization (WHO) estimates that over 1.5 billion people are infected globally with soil-transmitted helminths (STH), with 835 million children in need of treatment[1]. STH infections result from poor sanitation and hygiene conditions and tend to have highest prevalence in children of school-going age. The consequences of chronic worm infections in children are both widespread and debilitating. Worm infections interfere with nutrient uptake; can lead to anemia, malnourishment and impaired mental and physical development; and pose a serious threat to children's health, education, and productivity. Infected children are often too sick or tired to concentrate at school, or to attend at all. STH exacts a clear toll on human capital, hindering economic development, yet not all at-risk children are currently treated.

The WHO-recommended strategy is to control morbidity caused by STH infections through the periodic treatment with deworming medicines, without previous individual diagnosis, of at-risk populations. At-risk populations defined by WHO are the following groups living in areas where prevalence of STH exceeds 20% in the particular population group: young children (12-23 months of age); preschool children (12-23 months of age); school-age children; adolescent girls (10-19 years of age); women of reproductive age and pregnant women[2]. Deworming medications are safe, even for those not infected, and screening for infections costs 4-10 times the cost of treatment itself. Targeting school-age children through school-based deworming - the administration of safe, effective deworming drugs to children at schools - is considered a development "best buy" due to its impact on educational and economic outcomes coupled with the relative low cost of delivery. The school-based approach provides an easy way to treat large numbers of children through existing infrastructure, reaching them where they already are and leveraging higher numbers of teachers relative to health workers.

On January 15, 2018, the Ministry of National Health Services, Regulations and Coordination (M/o NHSR&C) convened a meeting in Islamabad to discuss the status of STH in Pakistan and the opportunities and path forward for establishing a school-based deworming program. Launching a high-quality school-based deworming program to reach children at scale could dramatically reduce the harm caused by STH on millions of children in Pakistan in a cost-effective manner. A subsequent meeting was organized by the Ministry of Planning, Development & Reform (M/o PD&R) on May 15, 2018 to discuss the status of STH in Islamabad Capital Territory (ICT). The Chief of Health, M/o PD&R, emphasized the need to establish a school-based deworming program in ICT, with close collaboration between the Federal Directorate of Education, M/o NHSR&C, stakeholders from the local ICT administration, and technical assistance partners. The Federal Secretary, M/o PD&R, recommended the establishment of a steering committee under the leadership of Member Social Sector & Devolution to oversee the school-based deworming program in ICT.

A technical assistance partnership of Interactive Research and Development (IRD), Indus Health Network (IHN) and Evidence Action are providing comprehensive technical assistance to the ICT administration and federal government to plan, implement and monitor a school-based deworming program in ICT. Together, these three organizations have extensive experience to support the government: IRD works in close collaboration with health and education ministries to manage health intervention programs across Pakistan; IHN focuses on creating excellence-driven, comprehensive, compassionate, free of charge and replicable healthcare system accessible to all; and, Evidence Action has an established track record of supporting ministries of health and education in countries in Asia and Africa to launch and strengthen school-based deworming programs.

This ***Policy and Institutional Framework*** sets out the overall strategy for a school-based deworming program in ICT and provides a framework for program implementation.

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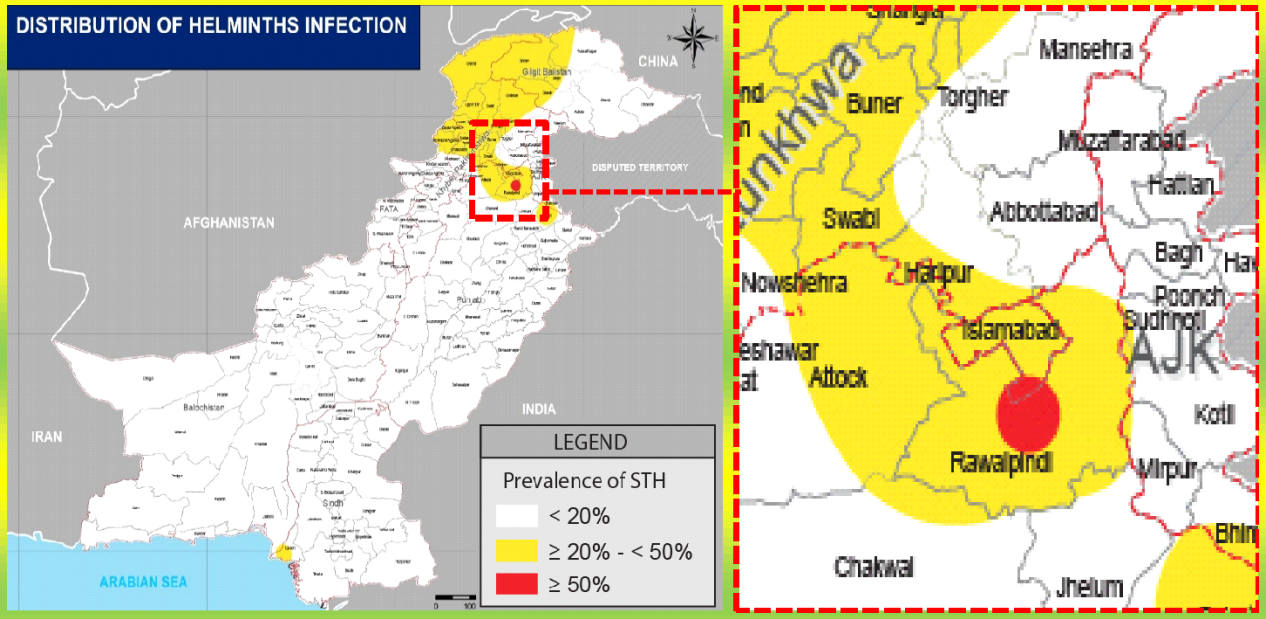
[1] World Health Organization. (2016). Soil-transmitted Helminth Infections (PCT databank). http://apps.who.int/neglected_diseases/ntddata/sth/sth.html

[2] Preventive chemotherapy to control soil-transmitted helminth infections in at-risk population groups. World Health Organization (2017). http://apps.who.int/iris/bitstream/handle/10665/258983/9789241550116-eng.pdf?sequence=1

2. The Need for Deworming in ICT

IRD, IHN and Evidence Action, together with the Institute of Development and Economic Alternatives (IDEAS) and WHO, collaborated with Pakistan's federal and provincial governments to carry out the first nationwide STH prevalence survey amongst school-age children in 2016. The WHO recommendation is that in areas where the prevalence of STH within particular at-risk population groups (see section 1) is between 20 and 50%, the particular at-risk populations should be dewormed once a year, and in areas with >50% prevalence, at-risk populations should be dewormed twice a year. The findings from the survey indicate that the prevalence of STH in school-age children across ICT exceeds 20% (figure 1). In accordance with WHO recommendations, annual deworming of children is needed in ICT. While in a very limited area of ICT the prevalence exceeds 50%, annual deworming is recommended to promote operational feasibility, particularly in the initial stages of



program launch.

Figure 1: STH prevalence in ICT[3]

3. Goals of a Deworming Program in ICT

The aim of periodic administration of deworming medication is to control **morbidity**. Morbidity from STH is associated with the **intensity of infection**[4]. Periodic treatment of at-risk populations reduces the intensity of infection, protecting infected individuals from morbidity due to STH. **The goal of deworming in ICT is to reduce morbidity from STH to a level below which it would not be considered a public health problem**. STH is considered as a public health problem when the prevalence of STH infection of moderate and high intensity among school-age children is over 1%. To achieve this goal of morbidity control, it is important that deworming is sustained in at-risk areas. Implementing mass drug administrations (MDA) in accordance with WHO-recommended treatment strategies would allow the Government of ICT to prioritize resources and achieve the most cost-effective impact for the target population.

4. Establishing a Deworming Program in ICT

With the need for mass deworming now established, the ICT administration and federal government have the opportunity to launch an evidence-based deworming program in ICT**.** School-based deworming is a key strategy that can be employed by the ICT administration and federal government to rapidly scale a cost-effective program treating at-risk school-age children.

4.1. Target Population

Three at-risk populations in ICT will be targeted by deworming: school-age children (5-15 years); children under 5 years; and women of reproductive age.

4.1.1. School-*Age Children*

To achieve the goal of reducing morbidity caused by worm infection, the program target is to treat at least 75% of the school-age population in ICT. The national STH prevalence survey indicates that an estimated 570,000 children aged 5-15 years in ICT are at risk for STH infection and stand to benefit from a mass deworming program, regardless of whether they attend public schools, private schools, religious schools, or are not enrolled in school. The program will strive to target all sub-populations. Stakeholders will assess the feasibility of reaching all sub-populations in the first year of the program; if deemed not feasible, stakeholders will endeavor to phase in sub-populations in subsequent years.

School-age children: different sub-populations
Deworming children in each of the target population groups (children enrolled at public schools, private schools, deeni madaris, and school-age children not enrolled at school) will provide unique challenges. Evidence Action has extensive experience supporting governments to target different population groups and the technical assistance partners will support the government stakeholders to devise strategies to reach all targeted

4.1.2. Children Under 5 Years and Women of Reproductive Age

The size of the beneficiary population for these at-risk groups will be worked out by the ICT Health Department, CDA/ ICT Directorate of Health Services and CA&DD.

[3] Baseline Survey Report of Soil-Transmitted Helminths Prevalence in Pakistan (April 2017)

[4] Intensity of infection is a measure of the number of worms infecting an individual. WHO have three classifications of intensity of STH infection: light, moderate and heavy.

4.2. Delivery Model

Effectively targeting the three different target populations (school-age children, children under 5 years and women of reproductive age) for mass deworming requires different delivery models.

4.2.1. Delivery Model for Targeting School-Age Children

School-age children can be cost-effectively targeted through school-based deworming, whereby treatment is delivered through existing education infrastructure, administered by teachers with support from the health system. This approach is highly cost-effective, well accepted by communities, and efficiently targets the population group at greatest risk for infection: school-age children. School-based deworming programs, implemented jointly by ministries of education and health, have proven successful in providing high treatment coverage and reducing STH infection in countries in Asia and Africa.

The benefits of school-based deworming

School-age children generally suffer the greatest intensity and morbidity and are particularly susceptible to developmental and behavioral deficits caused by worms; therefore, school-age children stand the most to gain from deworming. The school-based approach uses existing education infrastructure to reach children where they already are – at school. Teachers can be easily trained to safely deliver medication with oversight from the health system. School-based programs are designed to also reach non-enrolled children who can access free medication at schools alongside their enrolled counterparts. School-based deworming can reach upwards of 80% of school-age children through national programs implemented by Ministries of Health and Education. Tablets for school-age children are available at no cost through the WHO's drug donation program. The program model is extremely cost-effective, with a cost per child dewormed of less than US$0.50 per treatment.

Evidence Action has extensive experience providing support to governments to plan and implement school-based deworming programs, contextualizing program design to suit local needs in line with the existing evidence and cost-effective implementation modalities.

4.2.1. Delivery Model for Targeting Children Under 5 Years and Women of Reproductive Age

This component will be implemented by ICT Health Department through their fixed facilities (14 BHUs and 03 RHCs) and outreach community-based workers (LHWs, CMWs and other such workers), health service delivery outlets of CDA/ MCI Directorate of Health Services, and Tertiary Healthcare Hospitals under CA&DD. A PC-I shall be prepared (single or multiple as per decision of the stakeholders) to obtain federal government funding to this effect.

4.3. Program Stakeholders and Governance Structure

The deworming program will be led and implemented by the ICT administration and federal government of Pakistan. The key stakeholders are M/o NHSR&C, M/o PD&R, Ministry of Federal Education & Professional Training (M/o FE&PT), Ministry of Religious Affairs & Inter Faith Harmony (M/o RA&IFH), Capital Administration & Development Division (CA&DD), Federal Directorate of Education (FDE), Capital Development Authority/ Metropolitan Corporation Islamabad (CDA/MCI) and Chief Commissioner Office.

The governance structure for the program will be composed of a **Multistakeholders' Steering and Coordination Committee** serving as the central decision-making body for the program, providing a forum for representatives from key stakeholders to meet regularly to partake in key decision-making processes. Two separate **Implementation Committees** i.e. for school-age children and for children under 5 years of age and women of reproductive age with representation from all the relevant departments/sections will be formed to conduct the day-to-day implementation activities required for program delivery. Comprehensive technical assistance for school-based deworming will be provided by IRD, IHN and

Evidence Action. The active involvement of all stakeholders will be a key determinant in the overall success of the program.

4.3.1 Multistakeholders' Steering and Coordination Committee - Composition and Roles

The **Multistakeholders' Steering and Coordination Committee** will be primarily responsible for program oversight, including strategy and program implementation, providing strategic leadership of the program including establishment of program goals, and ensuring progress towards overall goals.

4.3.1.1 Composition of the Multistakeholders' Steering and Coordination Committee

The steering committee will be comprised of the following members:

S. No.	Title & Department	Status
1	Member, Social Sector & Devolution (SS&D), Planning Commission, Islamabad	Chair
2	Chief Health, M/o PD&R, Islamabad	Member
3	Director General Health Services, CDA/MCI, Islamabad	Member
4	Sr. Joint Secretary (Dawah), M/o RA&IFH, Islamabad	Member
5	Joint Education Advisor, M/o FE&PT, Islamabad	Member
6	Deputy Director General (Health), CA&DD, Islamabad	Member
7	District Health Officer, Chief Commissioner Office, Islamabad	Member
8	Director (P&D), Federal Directorate of Education, Islamabad	Member
9	Deputy Director (P-1), M/o NHSR&C, Islamabad	Member
10	Director Youth Engagement, IRD, Karachi	Member
11	Director GHD, Indus Health Network, Islamabad	Member
12	Program Representative, Evidence Action, Islamabad	Member
13	Assistant Chief Health, M/o PD&R, Islamabad	Member/Secretary

4.3.1.2 Roles of the Multistakeholders' Steering and Coordination Committee

Key responsibilities of the Steering Committee will include:

I. Defining goals and overall strategy implementation for treatment and prevention of STH among at-risk children in ICT
II. Gathering of information and discussing potential mechanisms/platforms for treatment of children under 5 years and women of reproductive age
III. Following up the achievement of program targets and key indicators
IV. Endorsement of work-plan/ operational plan
V. Endorsement of program budget
VI. Endorsement of training materials, IEC strategies and materials

VII. Endorsement of adverse event management protocol
VIII. Monitoring and Evaluation of the program
IX. Review of coverage data
X. Review of program data and results to inform improvements in future rounds
XI. Impact assessment

4.3.2 Implementation Committee (School Based Deworming)-Composition and Roles

The Implementation Committee (School Based Deworming) will be primarily responsible for treatment of school age population through school, formulating operational micro plans and their implementation.

4.3.2.1 Composition of the Implementation Committee (School-Based Deworming)

The Implementation Committee (School-Based Deworming) will be comprised of the following members:

S. No.	Title & Department	Status
1	Joint Secretary (Education), Capital Administration and Development Division, Islamabad	Chair
2	Director (Administration), Federal Directorate of Education, Islamabad	Member
3	Director (Training), Federal Directorate of Education, Islamabad	Member
4	Additional District Health Officer, ICT Health Department, Islamabad	Member
5	Director (Health Services), Municipal Corporation of Islamabad	Member
6	Deputy Director (Programme-II), M/o NHSRC Islamabad	Member
7	Deputy Chief (Health), M/o PD&R, Islamabad *(Secretary of the committee)*	Member
8	Representative from Auqaf Department, ICT	Member
9	Representative from PEIRA, Islamabad	Member
10	Programme Representative, Evidence Action, Islamabad	Member
11	Programme Manager, IRD	Member
12	Representative from WHO	Member
13	Another co-opted	Member

4.3.2.2 Role of the Implementation Committee (School-Based Deworming)

I. Development of training materials, IEC material and strategies
II. Development of work / operational plan and adverse events management protocol
III. Development of program budget
IV. Coordination of program implementation and delivery, logistics and information flows by working closely with relevant stakeholders

V. Mobilizing necessary personnel and resources to achieve program objectives
VI. Monitoring of program, including supportive supervision of program activities
VII. Reporting to the Steering Committee on all key elements of the program for strategic oversight and decision-making, and making recommendations for program improvements.

4.3.3 Implementation Committee (Deworming of Children Under 5 and Women of Reproductive Age)- Composition and Roles

The Implementation Committee (Deworming of Children Under 5 and Women of Reproductive Age) will be primarily responsible for formulating operational micro plans and their implementation.

4.3.3.1 Composition of the Implementation Committee (Deworming of Children Under 5 and Women of Reproductive Age)

The implementation committee will be comprised of the following members:

S. No.	Title & Department	Status
1	Joint Secretary (Health), Capital Administration and Development Division, Islamabad	Chair
2	Additional District Health Officer, ICT Health Department, Islamabad	Member
3	Director (Health Services), Municipal Corporation of Islamabad	Member
4	Deputy Director (Programme-II), M/o NHSRC Islamabad	Member
5	Assistant Chief (Health), M/o PD&R, Islamabad *(Secretary of the committee)*	Member
6	Programme Representative, Evidence Action	Member
7	Programme Representative, IRD	Member
8	Representative from WHO	Member
9	Another co-opted	Member

4.3.3.2 Role of the Implementation Committee (Deworming of Children Under 5 and Women of Reproductive Age)

I. Development of training materials, IEC material and strategies
II. Development of work / operational plan and adverse events management protocol
III. Development of program budget
IV. Monitoring of program, including supportive supervision of program activities

4.3.4 Health Stakeholders (M/o NHSR&C; CDA/MCI; CAⅅ ICT Health Department/ District Health Office):

I. Technical support, in line with WHO recommendations
II. Issuing necessary directives to health personnel of the requirements for participation in the deworming program
III. Sharing the data of women of reproductive age and children under the age of 5 years *(CA&DD/ ICT Health Department/ CDA/MCI)*

IV. Quantification and requisition of deworming medication through the WHO global drug donation program for school-age children (*M/o NHSR&C*)
V. Development of an adverse event management protocol *(M/o NHSR&C)*
VI. Communication of the program to health facilities at all levels, making health staff aware of their role in community mobilization and responding to potential adverse events
VII. Provision of trainers to facilitate training at all levels of the training cascade (*CDA/MCI, CA&DD & ICT Health Department/District Health Office*)
VIII. Reporting of children dewormed to WHO
IX. Reporting of final coverage data to WHO (*M/o NHSR&C*)
X. Development of PC-1

4.3.5 Education Stakeholders (M/o FE&PT; FDE; CAⅅ M/o Religious Affairs & Interfaith Harmony; Auqaf Department under Chief Commissioner Office and Private Educational Institutions Regulatory Authority (PEIRA)):

I. Sharing of relevant administrative data, including up-to-date data on numbers of schools (public and private) and enrolment – *FDE*
II. Sharing of relevant administrative data, including up-to-date data on numbers of deeni madaris and enrolment (Auqaf department under Chief Commissioner Office Islamabad)
III. Sharing of data on out-of-school children *(M/o FE&PT, FDE, Chief Commissioner Office)*
IV. Issuing necessary directives to education personnel of the requirements for participation in the deworming program
V. Communication of the program to all schools, making teachers aware of their role in disseminating information to children and their parents, administering tablets to children, and reporting coverage
VI. Development of training materials, IEC strategies and materials
VII. Dissemination of IEC material including mobilization of school staff and school councils/committees in line with agreed community sensitization strategies
VIII. Provision for trainers to facilitate training at all levels of the training cascade
IX. Reporting of coverage data through reverse cascade and sharing with M/o NHSR&C

4.3.6 Planning Commission, Ministry of Planning Development & Reforms (M/o PD&R):

I. Chairing of the steering committee, providing overall steering and coordination of the initiative
II. Provide facilitation amongst the key stakeholders for smooth implementation of the deworming program
III. Overall commitment for public financing of the program for long-term sustainability
IV. Overall monitoring of deworming program

4.3.7 IRD, IHN and Evidence Action:

- Provision of technical assistance to government stakeholders for **school-based deworming**, including support in the following areas:
    I. Development of a policy and institutional framework
    II. Development of a training cascade and training material
    III. Development of community mobilization strategies and materials
    IV. Development of a comprehensive adverse events management protocol
    V. Development of monitoring and evaluation strategies
    VI. Development of budgets and work plans
    VII. Support for the estimation of drug requirement, completion of the annual drug requisition form, and reporting to WHO
    VIII. Support for program monitoring to ensure the preparedness, process and reporting cascade in a timely manner

- Conducting independent monitoring and coverage validation of school-based deworming to provide an independent assessment of program coverage and processes, and sharing of findings with the stakeholders to guide strategies for future rounds of deworming

4.4. Alignment of Deworming with Global Guidelines, Targets and Commitments

In 2001, the World Health Assembly (WHA) passed resolution WHA54.19 endorsing regular treatment of groups at-risk of schistosomiasis and STH, particularly school-age children, as the best means to reduce mortality and morbidity resulting from STH, and improving health in infected communities.

STH is considered as a public health problem when the prevalence of STH infection of moderate and high intensity among school-age children is over 1%. To achieve this goal of morbidity control, it is important that deworming is sustained in at-risk areas. Implementing mass drug administrations (MDA) in accordance with WHO-recommended treatment strategies would allow the Government of ICT to prioritize resources and achieve the most cost-effective impact for the target population.

In 2012, the WHO Strategic and Technical Advisory Group for Neglected Tropical Diseases (NTDs) and partners published a roadmap for the control, elimination and eradication of NTDs, including targets for the period 2012–202[5]. The target set for STH was reaching 75% of at-risk school-age children with deworming medication by 2020.

NTDs have the greatest relevance for SDG 3 (the health goal) but affect and are affected by many of the other development areas covered under the 2030 Agenda.

4.5. Alignment of Deworming with Other Health and Education Programs and Policies in ICT and at National Level

The school-based deworming program is aligned with the National Education Policy 2017[6]; states, “Health departments should closely coordinate with the education department to provide health coverage to all students”.

The school-based deworming program is also aligned with the national and provincial multi-sectoral nutrition strategies that highlight the importance of nutrition sensitive programming such as deworming and addressing other underlying causes to overcome the malnutrition challenge in Pakistan.

Vision 2025 suggests addressing and raising population awareness campaigns about infectious diseases and other co-morbidities that can be fatal. Simultaneously, the program strongly encourages coordination of health policies amongst provinces to boost a healthy infrastructure promoting wellbeing of citizens[7].

5. Implementation Strategy for School-Based Deworming

School-based deworming will operate as an annual campaign, with deworming tablets administered by teachers at schools once a year, at no cost to children or families. Non-enrolled children will be encouraged to come to schools to receive treatment, with no bias in the program regarding enrollment status. Prior to deworming tablets being administered, training will be conducted to inform teachers and other personnel involved in the program about their responsibilities. The training will also serve as a means to provide schoolteachers with the resources they need to conduct deworming, including medicines, reporting forms, and IEC materials. The key stages involved in planning and implementing the deworming campaign are shown in figure 2, and full information is described in section 4 below. In order to ensure cost-effectiveness of the school-based deworming program, the various components of the

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[5] World Health Organization. (2012). Accelerating work to overcome the global impact of neglected tropical diseases – A roadmap for implementation

[6] Pakistan Education Policy 2017; chapter 13; physical education, health and sports in education; goals objectives and targets; P-105

[7]

implementation strategy will be evaluated for need and cost before a final program design can be determined. Existing government systems will be leveraged where possible, contributing to long-term program sustainability.

Figure 2: Key stages involved in planning and implementing a school-based deworming campaign. Reporting of data is a core component of monitoring and evaluation (M&E), but M&E will be employed throughout the various stages of the implementation strategy to ensure progress towards goals and inform programmatic decisions.

5.1. Program Planning & Management

For each annual round of deworming, it is important for all stakeholders to establish agreed, clear targets for the MDA using the most recent available population data. This will serve as a key metric of program performance, given the need to achieve high therapeutic coverage (> 75% of the target) to have a significant impact on worm infection in the target population.

Joint ownership and collaboration among stakeholders from Health, Education, and Planning Development & Reforms will be critical to success of the deworming program. Given the multiple responsibilities of all stakeholders and the effort involved in establishing the deworming program, on-the-ground support from the technical assistance partners will help to coordinate logistics and other program details leading up to deworming days.

Evidence Action's experience suggests that intense preparation and follow up activities are required both pre and post deworming. The stakeholders will need to undertake detailed planning to support a successful roll-out of the deworming campaign and maximize the number of children dewormed, and provide all relevant stakeholders at each level (district, sector, and cluster) with clear guidance on their roles and responsibilities.

The technical assistance partners will support the government to develop a comprehensive **operational plan** for each round of deworming, specifying how key activities will be conducted. A key criterion for developing the operational plan for each round of deworming will be cost-effectiveness. Lessons learned during the course of implementation will be incorporated into future deworming rounds.

When should school-based deworming be conducted?
As schools and teachers are used as a mechanism for administering tablets to children, school-based deworming has to be implemented when schools are in session. To facilitate teachers and to help to maximize coverage, deworming should be conducted at a time during the school year when there is sufficient time in advance of deworming to allow for preparations (e.g. training of teachers, outreach to students and parents, distribution of medication and other materials to the schools), and sufficient time after deworming to allow for schools to report back to authorities. Accordingly, periods around school exams and holidays are best avoided.

5.2. Drug Procurement & Management

The school-based deworming program will use **mebendazole 500 mg tablets** donated through WHO for the treatment of school-age children; mebendazole is on the "National Essential Medicines List" in Pakistan. For each annual round of

deworming, M/o NHSR&C will lead the estimation of overall drug requirements, with support from the technical assistance partners as needed, obtaining the data from the ICT administration and consolidating with data from other regions at the national level. Joint Request for Selected Medicines (JRSM) will be submitted to the WHO Country Office – Pakistan, which then submits to WHO Headquarters from where the final order is placed to the drug manufacturer/pharmaceutical company. It takes 6 – 8 months for the manufacturing of drugs and delivery to the country of request. Pharma donor takes the responsibility of the costs associated with the shipping of drugs to the central point of the consignee. The drugs are planned to be stored in the central warehouse managed by the M/o NHSR&C or the WHO Country Office - Pakistan from where the required share of ICT will be dispatched to training centres, for which the education sector representative in the Implementation Committee will assign a focal person for drug coordination. For Non-School Based Deworming in ICT, procurement will be made by health sector using public funds and the medicines will be stored at the central stores of tertiary care hospitals, MCI and ICT Health Department and transported to the health facility level using their logistics system.

Accessing freely donated mebendazole for school-age children
Mebendazole is donated to national ministries of health through WHO in all endemic countries for the treatment of all children of school age. A set of forms has been developed to facilitate the process of requesting drugs through the WHO donation program. These forms constitute an official government request to WHO for the supply of preventive chemotherapy medicines. The forms must be signed and approved by the M/o NHSR&C to formally endorse the country's request for these medicines. All donations are subject to review and/or availability of medicines. In addition, use of donated medicines must be adequately reported to WHO upon completion of treatment activities.

As deworming medication for school-age children is provided free-of-charge through the WHO global drug donation program, and future donations depend on reporting of treatment coverage, the M/o NHSR&C is committed to reporting to the WHO the number of children dewormed during each MDA.

5.2.1. Transportation and Storage of Drugs

Integral to the program's success is the availability of sufficient quantities of drugs at schools in time for deworming day, requiring logistic supply chain management for transportation of mebendazole. The logistics of drug supply involves coordinated effort from Department of Health, Department of Education and Planning, Development & Reforms. Upon receipt from the M/o NHSR&C, CDA/MCI, ICT Health Department/District Health Office, CA&DD will store the drugs at their main drug store and subsequently distribute through their established distribution cascades to their health facilities. The education department and health departments will do a mapping exercise to link the health facilities with the nearest education training centers/clusters. The technical assistance partners will provide technical support for the design of an appropriate distribution cascade and preparation of a drug-bundling plan for distribution of the deworming drugs along with the other program materials during training sessions (see section 5.3.)

5.2.2. Adverse Event Management

An **Adverse Event Management Protocol** is an essential program document, intended to ensure that all parties involved in deworming understand what to do and who to contact in case an adverse event occurs. Deworming drugs are very safe; however unrelated events can sometimes be attributed to deworming if there is a lack of awareness by teachers, children, and communities. The possibility of adverse events requires that protocols are established and circulated to all teachers and health centers so that the health functionaries are ready to handle any emergency. The technical assistance partners will work with the stakeholders to develop the protocol and support set up of related structures as needed.

Safety of mebendazole

Hundreds of millions of doses of mebendazole have been used since registration for human treatment was approved. Mebendazole has been through extensive safety testing and has been used in millions of people with few and minor side-effects. Extensive experience of deworming millions of children worldwide confirms that mebendazole causes only rare, mild and transient side-effects or "adverse drug reactions", and that these reactions are generally related to degeneration of the worms that have been killed. Most of the adverse events observed in school programs are mild and occur during initial rounds of implementation of the intervention – a time when children harbor more infections of high intensity. Mild abdominal pain, nausea, vomiting, diarrhea and fatigue are the most commonly reported adverse events in some children with higher worm loads but are not serious and do not normally require medical treatment. Mebendazole is easy to administer by non-medical personnel (e.g. teachers).

5.3. Training & Distribution

A training and distribution cascade provides a stepwise model for delivering information, drugs, and other program materials from the central level down to the schools and communities where program implementation takes place. A proven model used in many neglected tropical disease and public health programs worldwide, this structure enables government personnel at each administrative level to engage with the program as relevant to their expertise and areas of oversight, while breaking the overall complex program into manageable segments. The training cascade results in capacity building for government officials at each administrative level within ICT, and enables efficient collaboration between ICT's health and education sectors.

The technical assistance partners will work with the government to design the training cascade, develop training materials and curricula, and train master trainers. Training materials will be developed to convey necessary information in clear, simple terminology; have a brief handout with key messages that can be taken with them; and will enable teachers to convey the key messages from training to their peers upon returning to school, in preparation of deworming. The rollout of the training cascade will occur in the weeks immediately prior to the MDA. The program will aim to leverage training structures and personnel that are already in place and utilized for other government-led programs and initiatives in Pakistan. The training strategy is to utilize the existing 'sector/resource centers' and 'cluster' based training venues and training personnel that are routinely used by the Federal Directorate of Education for other educational programs (figure 3).

The deworming tablets and all of the various materials needed for a successful deworming campaign need to be distributed to schools in advance of the MDA. The technical assistance partners will help the government devise strategies to integrate the distribution of key deworming materials - including the deworming tablets, training materials/handouts, public awareness materials, and reporting forms - with the training cascade. Relevant stakeholders will work together to arrange the logistics of facilitating all materials to make their way from Islamabad to the training venues at all levels of the cascade.

LEVEL	LOCATION	NUMBER OF SESSIONS	FACILITATORS	TRAINEES
1	Islamabad Capital Territory	1	Technical Assistance Partners	2x Representatives from each **sector/ resource center:** •1x sector level master trainer - education •1x sector level master trainer - health Total No. of sectors/ resource centers = 6 Total No. of trainees = 12
2	Education Sector/ Resource Center	3 ICT's 6 education sectors will be grouped into 3 groups	Master trainers from level 1	2x Representatives from each **cluster**: •1x cluster level master trainer - education •1x health official from the health facility within education cluster Total No. of clusters = 30 to 36 Total No. of trainees = 60 to 72
3	Cluster	50 approx Approximately 50 sessions across all clusters, 40 trainees per training session	Master trainers from Level 2	1 to 2x teachers from each **school** (public, private schools and deeni madaris; no. of teachers dependent on school enrolment) Estimated No. of schools = 1,808 Estimated No. of trainees = 2,000

Figure 3: Overview of training and distribution cascade structure. A cascade structure provides an efficient and cost-effective mechanism to train teachers from all schools targeted by the program and provide them with the deworming tablets and materials they need. Master trainers from education sectors, trained in ICT, can provide training to cluster level master trainers and they can train further representative teachers from every school in ICT. Health personnel trained at level 2 can convey important messages to the local level health workers through their existing hierarchy. By integrating the training cascade with the distribution of deworming tablets and materials, further efficiencies can be achieved, ensuring that all the necessary materials are in-place in schools for the deworming campaign.

5.4. Public Awareness & Mobilization

For mass public health programs, it is critical to inform the public about the purpose of the program, the safety of the medication, and the benefits of participating. Sensitizing the media is essential to avoid inaccurate and sensational messages being conveyed to the public, particularly in the case of an adverse event. Establishing trust in the deworming program will be essential to encourage parents and communities to advocate for the program, and to promote high take-up among children. The technical assistance partners will work with ICT administration to tailor locally appropriate awareness campaigns about the deworming program. These awareness campaigns will communicate targeted messages through a variety of channels to increase public awareness of deworming days and convey messages about the safety of the medicine and why treatment is important. Such campaigns will aim to encourage participation of both enrolled and non-enrolled children, as well as to provide information to children, parents, teachers, and community members on prevention of worm infection.

Existing tools and channels in ICT for public awareness and mobilization can be leveraged for the school-based deworming program. The Directorate of Municipal Administration (DMA), under CDA/MCI, plays an important role in

community mobilization for dengue and other epidemics by spreading messages through media such as banners and billboards. Similarly, the Information Technology Section of the Directorate of Education utilize mass messaging through Whatsapp and SMS for communicating important announcements to teachers. Child health and education messages are often delivered free of charge through national TV and radio along with the private TV channels, by arrangement of the Ministry of Information Broadcasting & National Heritage (M/o IB&NH). Local cable TV and social media can potentially be utilized to convey public awareness messages.

Effective community sensitization and mobilization will support the MDA by:

Raising awareness on the importance of deworming and generating demand among beneficiaries and other relevant audiences (i.e. parents, policy-makers, government, media)

Maximizing the number of children dewormed during each treatment round, including hard-to-reach populations such as out-of-school children

Preventing negative publicity and the spread of false information about deworming, both at the community level and in the media, and ensuring proper management of any adverse events

While the program will supply schools and communities with selected public awareness materials, schools, health facilities and local stakeholders are encouraged to implement various methods to convey the message about the MDA to the children and the community. Methods do not necessarily need to incur costs or involve time-consuming work by teachers and health workers. Various methods and media types, depending on local contexts, can be employed to spread the message.

5.5. Mass Drug Administration

School-based deworming is often successful operating as an annual campaign, where awareness is generated and momentum gained through community sensitization at a single point in the year. In this model, deworming in schools is typically implemented through a main **deworming day** targeting all school-age children, whether or not enrolled at school, followed by a **mop-up day**, typically within one week of the deworming day, to target children who did not receive deworming medication. This mop-up can be very useful for attaining high program coverage.

Deworming medication will be administered by teachers at the schools, with officials from the health system on standby to support if and when problems arise. Teachers will record the number of children who received a tablet using standardized reporting forms; forms are aggregated at the school level and submitted to designated officials according to the agreed-upon reporting cascade (see section 5.6.2). Left over drugs will be sent back to the main drug storage at ICT level through a reverse distribution system.

5.6. Monitoring & Evaluation

The school-based deworming program will require a strong monitoring and evaluation (M&E) system to ensure that the deworming campaign is implemented as planned and the desired results are being achieved. Key to measuring the success of deworming is reliable reporting of the number of children dewormed during each MDA. Careful monitoring will help to identify areas where improvement is necessary, guide future planning, and allow assessment of the overall impact of the program. The technical assistance partners will support the design and implementation of a

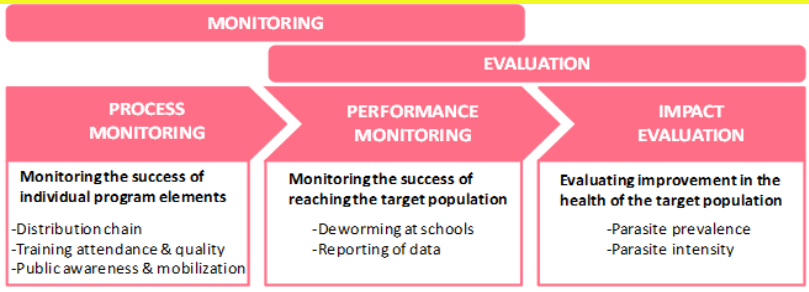

Figure 4. Overview of M&E strategy. All elements of the process involved in ensuring the successful implementation of a deworming campaign will be monitored ('process monitoring'), as will the overall performance of deworming at schools ('performance monitoring'). The overall aim of the entire program is to reduce the worm burden amongst school-age children, and the impact of the deworming program will be evaluated by STH prevalence and intensity surveys ('impact evaluation') after a number of rounds of deworming.

robust M&E strategy (figure 4) for school-based deworming. Complementary M&E activities will be implemented by both the government stakeholders and technical assistance partners, and will encompass both performance metrics as well as process metrics. The findings of M&E from each round of deworming will feed back into the planning and implementation of future rounds to facilitate programmatic improvements. Impact monitoring via follow-up parasitology assessments will be considered and planned for in later years as appropriate, after achieving multiple rounds of high-coverage MDAs in ICT.

5.6.1. Process Monitoring

A monitoring plan will be executed with participation of relevant stakeholders to ensure that all program activities are implemented as per guidelines. Monitoring will assess preparedness to ensure that everything is ready in advance of the deworming campaign. Attendance of participants at all training sessions throughout the training cascade will be recorded using attendance sheets. The quality of training will be monitored by observational monitoring visits to selected training sessions. Direct observation of deworming in a sample of schools on deworming day and mop-up day will serve to monitor that deworming is actually happening, that key processes are being followed, and also to highlight any difficulties.

5.6.2. Reporting of Coverage Data – Reverse Cascade

A key indicator for the success of deworming is the number of children dewormed, known as therapeutic coverage. The technical assistance partners will support the stakeholders to design (i) appropriate reporting forms that will be completed by teachers on the day of deworming and (ii) an appropriate reverse cascade structure to provide a cost-effective and efficient system for reporting coverage data. The existing information cascade utilized by the FDE will be used to send and compile data from the schools, to cluster, education sectors/resource centers and ultimately to FDE level (figure 5). With the passage of time, the TA partners will advocate with the government to integrate the deworming data into the government Health Management Information System (HMIS) and Education Management Information System (EMIS). As deworming medication for school-age children is provided free-of-charge through the WHO global drug donation program, the M/o NHSR&C is committed to reporting the number of children dewormed to the WHO; therefore, FDE will share the coverage data with M/o NHSR&C.

Figure 5: Reverse cascade for reporting of coverage data

5.6.3. Independent Monitoring

An important component of the technical assistance for school-based deworming is **independent monitoring,** whereby an independent assessment of the program is obtained to validate that protocols are being followed, information is being relayed correctly, and paper records correspond to actual events. Independent monitoring will be conducted in line with each MDA by survey teams contracted by the technical assistance partners. An important aspect of independent monitoring is the process of '*coverage validation*'. In order to verify that the number of children reported as being dewormed corresponds to the actual number of children who received a tablet, a number of schools will be randomly selected across ICT, ensuring geographical representation, and will be visited by independent monitors on deworming day and in the days afterwards. This process of coverage validation serves as an important mechanism to verify whether the data reported by the schools are accurate. The data collected by independent monitors will help to identify what areas of the program are operating well, and what areas need improvement. Following analysis of this data, the technical assistance partners will make recommendations to the steering committee about areas of the program that can be modified.

6. Program Financing

School-based deworming will be implemented outside PSDP but implementation partners will use their available resources to support program implementation while funds and will be made part of regular health program in future. In this regard, a PC-I will be prepared for non-school based deworming (covering children under 5 years and women of reproductive age) and funded through PSDP.

7. Enforcement

School-based deworming will be implemented and enforced through a Letter of Intent signed between different stakeholders while the non-school based component will be executed in PC-I mode.

Annexure

Technical Working Group for Drafting of Policy and Institutional Framework for Deworming Islamabad Initiative

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